



# AN ANALYSIS OF NINE FOLD CLASSIFICATION LAND USE LAND COVER CHANGES IN TIRUVANNAMALAI DISTRICT, TAMIL NADU, INDIA

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## ABSTRACT

The study area of Tiruvannamalai District lies between 11. 55° to 13. 15° North Latitudes and 78.20° to 79.50° East Longitudes. The North and west of Tiruvannamalai is covered by Vellore district and the southwest is by Krishnagiri District. Both Villupuram and Kanchipuram Districts are located in south and east side of Tiruvannamalai District respectively. The total geographical area of the district is 6191 sq.km. This paper is given total nine-fold classification of land in the district. The data has been used two different time periods (2007-08 and 2011-12). The present study deals with based on the secondary data of Gwritten.

**KEYWORDS:** Agriculture, Cultivation, Statistics, Spatial, Nine-fold, Temporal.

## Introduction

Land use classification based on different type of uses shows that of a total land mass of 328.73 million ha in the country. The states were also finding it difficult to present comparable data according to this classification owing to the lack of uniformity in the definitions and scope of classification covered by these five broad categories. Till 1949-50, the land area in India was classified into five categories known as the five-fold land utilization classification. This five-fold classification was, however, a very broad outline of land-use in the country & was not found adequate enough to meet the needs of agricultural planning in the country. In present day we are using this nine fold classes.

## Study Area

The district lies between 11°. 55 and 13°. 15 North Latitudes and 78°.20 and 79°.50 East Longitudes of Tiruvannamalai District. North and west of Tiruvannamalai is covered by Vellore district and the southwest is by Krishnagiri district. Both Villupuram and Kanchipuram districts are located in south and east side of Tiruvannamalai district respectively. The total geographical area of the district is 6,191 sq.km. Physiographically, the district formed on undulating terrain dotted with clusters of hillocks, particularly in the western and northwestern parts. Jawadhu hills are the major hilly regions and other smaller hillocks are scattered in Tiruvannamalai, Chengam, Polur, Arni and Kalasapakkam blocks. The important hills in the district are Jawadhu hill (2500 ft. above MSL), Kailasagiri hill (2743 ft. above MSL) and Tiruvannamalai (2668 ft. above MSL) hill. The area under forest during 2005 - 06 was 1, 53,318 hectares. The location map shown in Fig. No.1

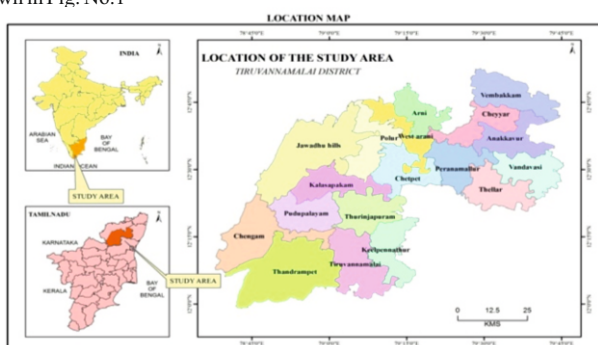


Figure No.1 Location of the Study Area

## Data and methodology

The present study is based on the secondary data collection of G-Written, the data is collected from the department of statistics and Economic, Tiruvannamalai. Two different time period the data has been collected. The data from 2007-8 and 2011-12. A simple statistical method has followed for this study. All the spatial distribution maps layout prepared by the Arc GIS 9.3 software.

## Result and Discussion

### Forest

The nine fold classification of land use and land cover changes were calculated the year of 2007-08 and 2011-12. The forest area totally covered in the western part of the study area. Only six blocks having the forest area in the district. The

maximum forest in year of 2007-08 area wise 497.75 hectare covered in Annakkavoor Block, Jawadhu Hills covering 331.66, Polur block covered 43 hectare, Thellur block has 24.96, Thirunipapuram covered 11.27 and Chetpet covering only 2.36 hectare. Other blocks are no forest area in the year of 2007-08. Compare to the year of 2007-08 the forest in year 2011-12 Polur block increased 1.33 hectares. The map showing forest, figure no.2.

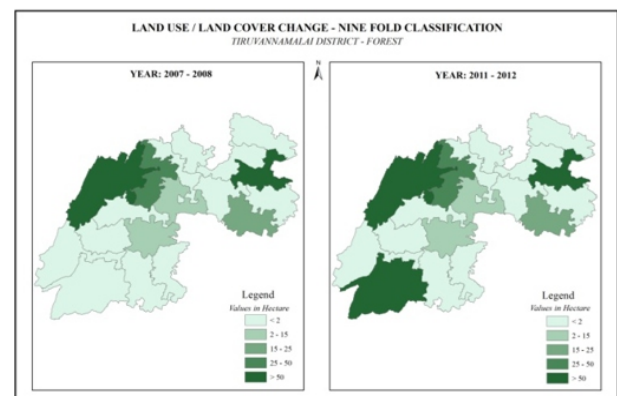


Figure No. 2 Forest

### Uncultivable waste

The Uncultivable waste land, in year of 2007-08 the highest uncultivable waste area of Arani having 6552.30 hectares, respectively the Thandarampat block having 3800.06 hectares, Chngam occupies 1775.74 hectares, Tiruvannamalai block has 1539.64 hectares, Polur 1178.90 hectares, Kilpennanthur has 1159.80 hectares, Jawadhu hills block has 1121.14 hectares, Remaining eleven blocks area has less than thousand hectares. The Annakkavoor and Pudupalayam have less than hundred hectares. In year of 2011-12 compared to 2007-08 Thandarampet, Tiruvannamalai, Polur, Jawadhu hills, Thellur blocks the uncultivable waste is reduced. The result shown in figure no.3.

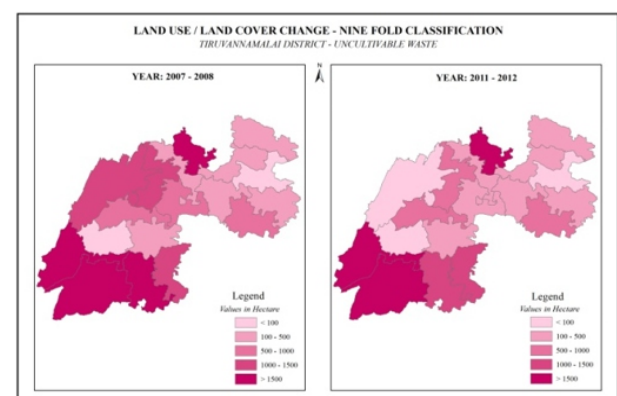


Figure No.3 Uncultivable waste

### Non-Agricultural Uses

The non agricultural uses for the year of 2007-08 there are 6 blocks is increased. The Tiruvannamalai Block is from the year of 2007-08 5616.58 hectare and the year of 2011-12 occupies 1554.72 Hectare, the changes are 4061.86 hectare, it's very highly in this block. The changes between 2007 – 08 and 2011 – 12, the Tiruvannamalai, west Arani having vast changes of more than 1000 hectare, reduced the non agriculture uses, and minimum changes of Vandavasi, Cheyyar and Peranamathur. All other blocks changes gradually for positive and negative is below 1000 hectares. The map showing Non-Agricultural Uses figure no.4.

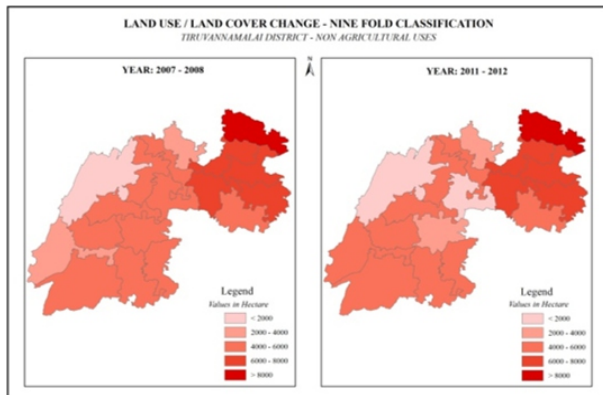


Figure No.4 Non-Agricultural Uses

### Barren and cultivable waste land

In year of 2007 minimum are under barren and cultivable land changes between the year is 89.73 hectare. The maximum changes of Polur block was decreased 3623.38 hectare. This block is 2007-08 having 5066.90 and 2012 has 1443.52 hectare very limited changes of 0.4 hectare increased the cultivable land for block of west Arani. The Kalasapakkam block has no change.

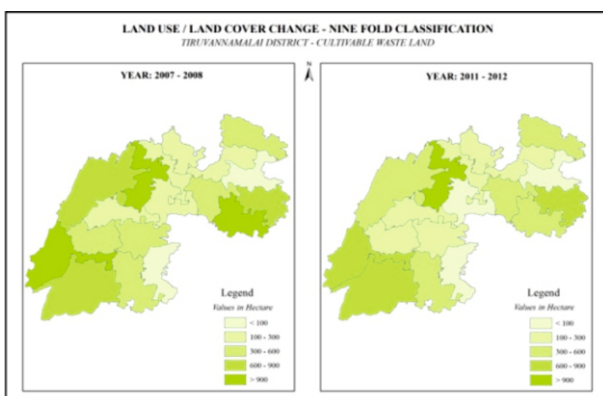


Figure No.5 Barren and Cultivable Waste land

### Permanent pasture and other grazing land

In year of 2012 permanent pasture and other grazing land Pudupalayam, Chengem, Kilpennanthm, having below 5 hectares. The maximum pasture available in the block of Vandavasi 414.13, Vembakkem 340.15, Anakkavoor 299.5, and Peranamallur has 294.36. in year of 2007 Pudupalayam, Kilpennanthur, Thandampet has below 10 hectare and Vandavasi, Vembakkam and Annakarur blocks having more than 3000 hectare. Pudupalayam and Javvadu hills has no changes between the years.

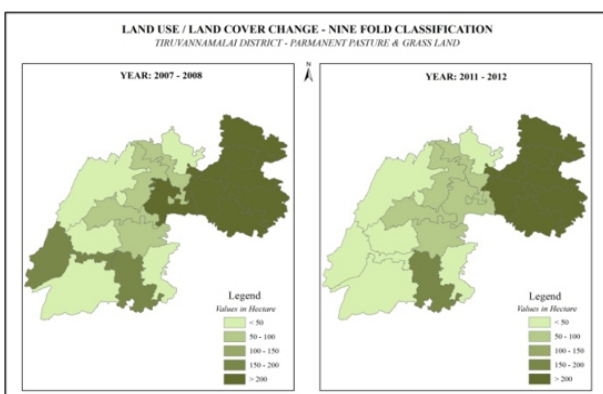


Figure No. 6 Permanent pasture and other grazing land

### Miscellaneous tree crops

In year of 2012 the Javvadu hills 0.36 hectare, Arani 2.82 hectare and Thirinjapuram 8.93 hectare is lowest amount of tree crops. The higher values of cheyyar 446.59, Vembakkaam is 203.228 hectare and Annakarur is 193.15 hectares. In year of 2007-08. Annakarur, Arani, Thirinjapuram has low amount of Miss Tree crops, that means less than 10 hectares. The maximum amount of tree crop is available in the blocks of Cheyyar, Annakarur and Chengam, Vandavasi And Vembakam blocks having more than 200 hectares of land. The west Arani and Vembakkam blocks has no changes.

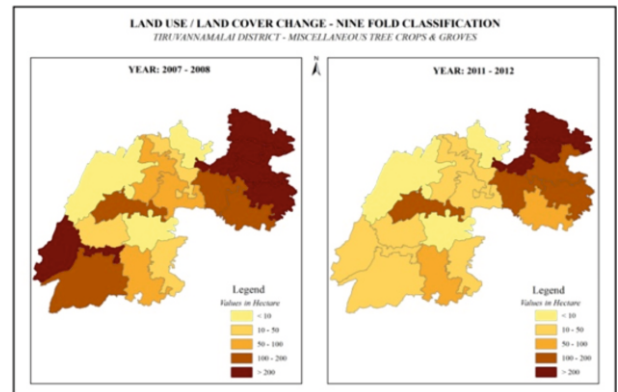


Figure No.7 Miscellaneous tree crops

### Current Fallow

The availability of current fallow land minimum has in year of 2011-12 chetpet 1342.9, Javadhills 1399.25 hectare. The maximum current fallow recorded at the Vembakkam 10669.11 hectare. In year of 2007-08 minimum current fallow on Polur 1154.26, Thandarampat 1996.71, and high current fallow in Chengam block has 10209.88 hectare. The changes between the 07-08 to 2011-12 year 2800.81 chetpet, Chengam 1569.62, was increased and decreased blocks of Peramanallur 6260.89, thellar 5151.53 hectare.

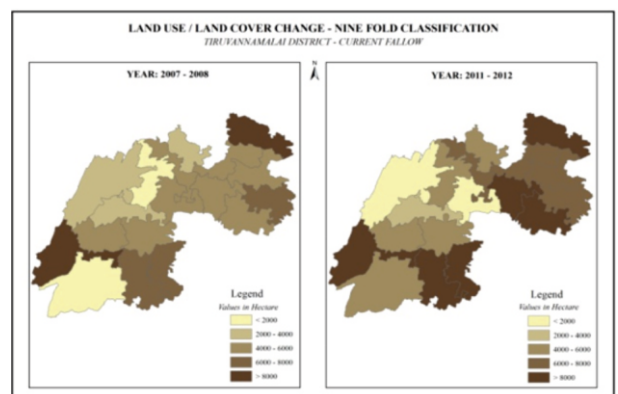


Figure No.8 Current Fallow

### Other fallow

In year of 2007-08, other fallow land available minimum is in Kilpennanthur 179.93 hectare, west Arani 386.88 hectare and maximum in Thandampet is 7437.65, Thellar has 3872.84 hectare. In 2011-12 kilpennanthur 100.45, chetpet 161.58 hectares and high in Thandarampat 6074.7 hectare very limited changes in Annakavur block decreased 6.12 hectare increased maximum in Thandarampat block of 1362.95 hectare.

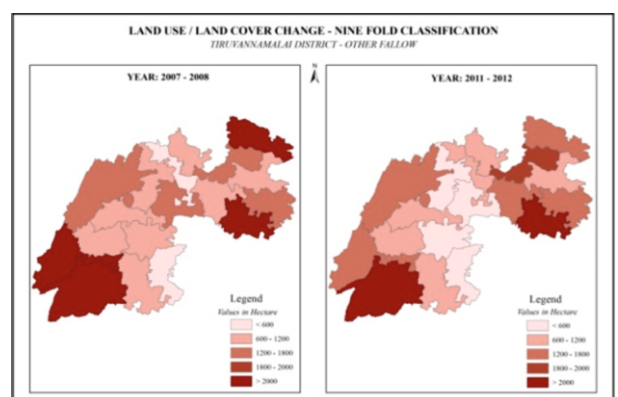


Figure No.9 Other Fallow

**Net cultivated area**

The net cultivated area for the year of 2011-12 chetpet is 2852.06 hectare and maximum available in thandarampeat block of 17733.66 hectare. In year of 2007-08 mini-mum netcultivated area under Javvadu hills Arani and Pudupalaiyam blocks. The maximum net cultivated under Thandarampat, Thurinipuram and Tiruvannmalai blocks.

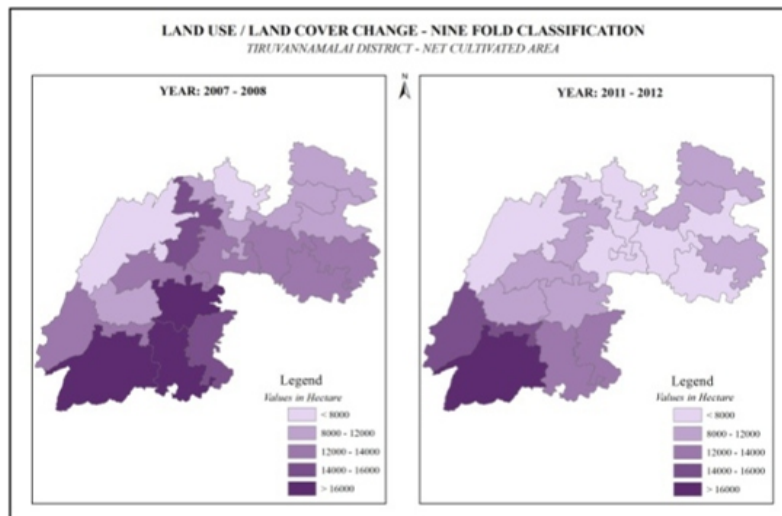


Figure No.10 Net cultivated area

Table No. 1 Land use land cover 2007-2008

Block Name	Forest	Uncultivable Waste	Non Agricultural	Cultivable	Permanent Pasture & Grass Land	Misc. Tree Crops Groves	Current Fallow	Other Fallow	Net Cultivated Area
Anakkavoor	497.75	81.56	7953.66	83.425	305.825	224.56	4916	1079.38	10900.795
Arani	0	6552.295	3866.365	273.64	36.5	2.815	2893.3	829.145	7798.56
Chengam	0	1775.74	2639.58	994.64	180.985	214.535	10209.88	2018.18	13540.92
Chetpet	2.355	573.865	5616.58	241.395	271.56	62.92	4143.71	1433.23	12302.105
Cheyyar	0	222.45	6062.99	265.76	251.675	449.165	5551.395	1778.925	10929.69
Jawaduhills	331.665	1121.14	770.76	884.175	15.12	0.355	2148.5	1509.11	7015.755
Kalasapakkam	0	678.475	4681.335	211.66	83.197	165.43	3243.819	1007.649	12103.115
Kilpennathur	0	1159.8	4478.51	97.395	2.925	31.38	7202.71	176.93	14160.585
Peranamallur	0	363.225	6540.175	399.53	295.385	178.64	4145.11	839.315	13157.165
Polur	43	1178.895	4743.63	5066.904	95.408	80.375	1154.263	648.495	14881.45
Pudupalayam	0	67.935	4241.275	307.945	0	38.39	5254.85	1175.505	9096.245
Thandarampat	0	3800.055	5717.505	858.655	6.44	122.475	1996.71	7437.65	19371.905
Thellar	24.96	634.065	5858.495	1245.27	310.455	155.605	4052.54	3872.84	13559.92
Thurinipuram	11.27	270.395	5013.24	370.185	69.585	9.735	5057.765	890.675	16753.785
Tiruvannamalai	0	1539.64	5477.565	424.74	158.975	70.32	7732.25	905.76	16005.165
Vandavasi	0	421.07	7253.85	631.22	413.455	211.975	6251.33	1214.88	13068.965
Vembakkam	0	334.73	8288.775	509.345	332.045	203.28	9325.8	2694.82	10286.845
West arani	0	282.665	4219.175	255.12	78.465	33.85	5325.84	386.88	9439.35

Table No. 2 Land use land cover 2011-2012

Block Name	Forest	Uncultivable Waste	Non Agricultural	Cultivable	Permanent Pasture & Grass Land	Misc. Tree Crops	Current Fallow	Other Fallow	Net Cultivated
Anakkavoor	497.75	81.56	6863.36	81.58	299.5	193.15	6075.27	1085.5	7540.27
Arani	0	6552.3	3893.16	261.25	36.28	2.82	4073.72	748.28	6684.84
Chengam	0	1826.79	4075.82	625.45	2.64	42.66	8640.26	1565.81	14800.29
Chetpet	2.36	187.19	1554.72	17.31	87.77	35.21	1342.9	161.58	2852.06
Cheyyar	0	223.04	6066.03	266.13	251.68	446.59	7528.58	1947.34	8782.7
Jawaduhills	331.67	75.45	215.19	470.21	14.92	0.36	1399.25	1247.98	3627.83
Kalasapakkam	0	678.48	4691.3	211.66	83.2	167.15	3478.22	952.56	11919.21
Kilpennathur	0	1153.68	4572.05	68.44	2.93	46.14	8324.14	100.45	13313
Peranamallur	0	363.23	6541.72	396.84	294.36	184.29	10406	1560.27	6169.93
Polur	44.33	955.8	4713.91	1443.52	74.7	32.08	4702.29	445.68	11708.07
Pudupalayam	0	67.94	4290.88	264.03	0	32.3	4568.03	965.28	9993.53
Thandarampat	97.17	3628.91	5789.18	854.71	11.05	15.58	5117.26	6074.7	17733.66
Thellar	24.96	573.83	5242.87	368.42	258.72	68.09	9204.07	3010.81	7144.44
Thurinipuram	11.95	270.4	3140.63	214.53	51.72	8.93	4892.38	398.24	11351.57
Tiruvannamalai	0	1219.89	5670.69	514.47	158.98	52.66	9931.9	887.14	13686.75
Vandavasi	0	422.28	7258.68	603.58	414.13	182.36	7935.91	1371.62	11204.93
Vembakkam	0	334.73	8307.67	503.32	340.15	203.28	10669.11	1678.3	10686.83
West Arani	0	282.67	4226.09	254.72	78.47	33.85	6545.8	1139.24	7460.52

**Conclusion**

The present study can be analyzed for nine fold classification of land use land cover changes. The total area of all kind of land use in year of 2011-2012 maximum in Thandarampat block is 39322.22, Vembakkam is 32723.37 and Tiruvannamalai is 32122.42 hectares. The minimum total area use under Chetpet block is 6241.08 hectare. In year of 2007-08 maximum land must used under Thandarampet block is 39311.39 hectare, Tiruvannamalai block is 32314.41 hectare and the minimum land use for Jawad Hills block is 13796.58 Hectare. The Pudupalaiyam, Arani, West Arani and Cheyyar these four blocks have no changes in total land used area.

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